



SMART CITIES PILOT CASE STUDY

www.bloTope-project.eu

bloTope Benefits

- Easy integration of data from multiple sources including from third-parties
- Support for near real-time collection and analysis of data for IoT applications
- Works with multiple mobile application platforms (iOS, Android)
- Protects privacy with authentication and identity management for accessing IoT data

“The bloTope technologies provide the tools to easily bring available data together from different sources to provide new services that improve public safety for schools in Brussels city.”

Lionel Van Dongen

Brussels Region Informatics Centre

“The ability to easily combine both open data available within smart cities while capturing real-time feedback of users to extend and make that data more valuable is a key objective of the bloTope project technologies.”

Prof Kary Främling

Aalto School of Science and Technology/bloTope Project Coordinator



The bloTope project receives funding under the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No. 688203.

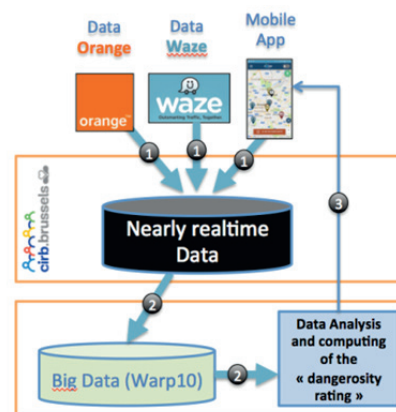
Improving Safety Around Schools

Challenge

The city of Brussels wants to improve the safety of students around the school and on their way to school by reducing the number of vehicles on the roads, informing children and parents about the dangers around the school, and by advising children and parents to select safer routes to school. Data from multiple sources could be used to provide needed guidance through a new mobile Internet of Things application.

Solution

Data coming from different third-party sources such as Waze and Orange Telecom is combined with open and near real-time data collected by Brussels City sensors and monitoring. The data is analysed and shaped in an intelligent way to be usable in a mobile application. Data is pushed into a bloTope supported database to compute a ‘dangerosity rating’ for each specific user’s route, which is then displayed in the mobile application used by a particular parent or student with appropriate security and privacy protection.



bloTope Technologies

The solution uses bloTope technologies to bring together disparate data coming from multiple sources and provides the capabilities to wrap the data in a way that makes it easy to retrieve for analysis by creating a bloTope O-MI Node. The bloTope supported WARP10 database stores and manages the data retrieved from multiple sources.

The bloTope O-DF technologies provide the ability to easily identify road segments in Brussels and for each road segment key data can be accessed including the status and the cause of any events and measured speed in the street. The near real-time data and analysis is made accessible through the bloTope Marketplace so that at any time, the mobile application can access the values by using a bloTope O-MI request and be notified of traffic jams, or other events, provide local guidance and route recommendations to parents and students.

bloTope Benefits

- Easily combine existing systems to create new open IoT Systems of Systems providing new opportunities for business and value for consumers
- Common features such as billing and micro-transactions to accelerate creation of sustainable ecosystems
- Security, privacy and trust mechanisms to facilitate responsible access, use, and ownership of data

“The technologies from bloTope make it possible to create new ecosystems that bring together different technologies and providers to deliver new services that benefit consumers while creating new opportunities for businesses.”

Natalia Reen

Forum Virium Helsinki

“Combining existing data and systems to create new IoT services for consumers and ecosystems based on Systems of Systems that benefit business through open interfaces is one of the key advantages provided by the bloTope project technologies.”

Prof Kary Främling

Aalto School of Science and Technology/bloTope Project Coordinator



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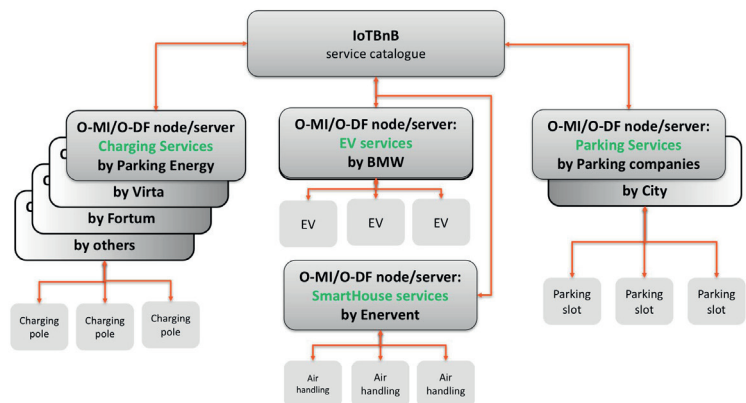
New E-Car Charging Ecosystem

Challenge

The city of Helsinki wants to support Finland's climate goal of adding 250,000 electric vehicles on its roads by 2030. Mass usage of electrical cars is limited by charging infrastructure as charging stations are inefficiently scattered throughout the city and controlled by several big players and a few small companies. A more comprehensive ecosystem of charging stations is needed that is more adaptive to e-car owner needs.

Solution

An electrical infrastructure to preheat cars during winter time already exists with many utility poles on the streets and parking areas having embedded electrical outlets. Combining these with commercially provided service points would create easy “roaming” where all city charging possibilities are integrated into the same system/map/service catalogue, which would accelerate the adoption of e-cars in Finland and create new opportunities for business.



bloTope Technologies

The solution uses bloTope technologies that ease the creation of System of Systems (SoS) where information from platforms from different charging service providers and the city of Helsinki's own electrical devices as well as other information sources can be accessed when, and as needed using standardised open interfaces. The bloTope O-MI/O-DF technologies make it possible to easily integrate data from wide range of charging devices and systems, and to provide an open platform for building interoperable applications for e-car owners to roam between and utilise a wide range of charge points. The bloTope technologies being utilised provide for security, privacy and trust mechanisms to facilitate responsible access, use, and ownership of data, even when data is stored in other applications and databases. Billing mechanisms for IoT are provided by bloTope technologies to support micro-transactions for facilitating IoT market creation within the charging station ecosystem.



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bloTope Benefits

- Easy integration of various types of sensor data to support decision making for IoT systems
- Scalable data collection and device management capable of supporting an IoT system spanning an entire smart city
- Disparate data content made accessible and analysable by multiple IoT systems
- Open platform for additional IoT systems and applications to access and exploit collected environmental data

“bloTope technologies make it possible to quickly integrate sensor data and networks to create smart decision making systems for improving the comfort of citizens during heat waves in the city of Lyon.”

Emmanuel Gastaud

Greater Lyon Urban Area Authority

“Rapid development and support for a wide range of data sources and control mechanisms is one of the strengths of bloTope in creating innovative IoT systems.”

Prof Kary Främling

Aalto School of Science and Technology/bloTope Project Coordinator



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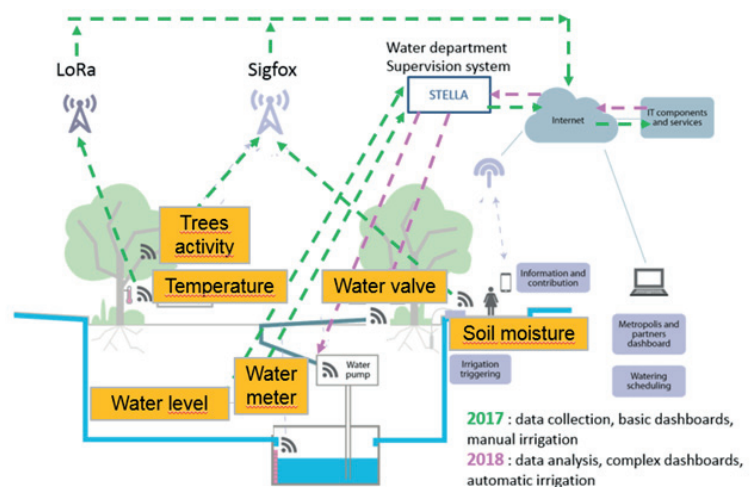
Increased Comfort On Hot City Days

Challenge

The Métropole de Lyon is growing in population and also experiencing a rapid change in climatic conditions with more and more very hot days, and the trend expected to increase with global warming. To mitigate heat waves Greater Lyon wants to strengthen the natural refreshment capacity of trees by using various sensors and actuators, existing data sources and rainwater stored in a basin under the street to provide smart watering based on the Internet of Things technologies.

Solution

The solution includes a new citizen portal to enable everyone to be informed about heat conditions and heat waves, along with access to data to support new applications and services. This is combined with a smart irrigation system that boosts the natural power of refreshment from trees, particularly during heat wave periods where watering is triggered independently for each sector of streets based on numerous data collected about air temperature, soil humidity, weather forecast, rain water availability and other parameters.



bloTope Technologies

The solution uses bloTope technologies to combine sensor data from air temperature, water level monitoring, soil conditions, tree activity and other sources for determining when specific irrigation valves are actuated for watering trees in different street segments. Using a bloTope data wrapper for different data sources enables easy analysis of cross-data values and to use the data to trigger specific actions within the IoT system. A bloTope O-MI Node stores the data collected by the various sensors and systems. The O-DF technology from bloTope structures the data in a standardised format, which provides the input to make decisions for the irrigation actuators.